NATIONAL REGISTER ELIGIBILITY ASSESSMENT
VESSEL: SS *Lincoln*

Left: The SS *Lincoln*, formerly the *President Lincoln*, at the Maritime Administration's Suisun Bay Reserve Fleet in Benicia, California in February 2009. Maritime Administration photo. *Right:* The *President Tyler*, sistership of the *Lincoln*, near the port of San Francisco circa 1961. http://www.apl.com/history/images/tyler.jpg

Vessel History

The SS *Lincoln* was launched as the *President Lincoln* on February 28, 1960 at the Bethlehem Steel Company Shipyard in San Francisco. Its keel was laid on December 16, 1959 and it was delivered to its owners, American President Lines (APL) on May 23, 1961. This San Francisco-based company was operating both cargo ships and passenger vessels between the United States Pacific Coast and the Orient, and on an around the world service. The *President Lincoln* was the first of two "Searacer[1]" class multi-purpose cargo vessels designed by George G. Sharp, Inc. for APL. Its sistership, the *President Tyler,* was completed in August of 1961.

The *President Lincoln* and *President Tyler* were an early response to the rise of containerized cargo. They had the hull form of the "Mariner[2]" class break-bulk cargo ships developed in the 1950s, and the traditional cargo ship profile with a single superstructure near the midship point housing navigating bridge, crew accommodations and upper machinery spaces. The majority of holds were designed for break- bulk cargo, with standard hatches and mast and boom cargo gear. The masts were of a multi-leg design joined at the top. This mutually supporting system made possible a shorter and much lighter rig than the conventional masts or king posts. There were twenty-four 10-ton capacity booms and one 30-ton capacity boom.

Containerized cargo was carried in Hold No. 4 immediately forward of the superstructure. The hold was a composite design; combining vertical cell guides for container stowage with traditional tween decks[3] outboard of the hatch openings for break-bulk and special cargo.

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[1] Searacer refers to a distinct type of combination break-bulk-container vessel.
[2] The Mariners were the first new class of cargo ships built in the U.S. after WWII.
[3] The between deck or 'tween deck as it's commonly known, is the space between two the decks in the hull of a vessel.

Instead of one hatch on the centerline, there were six hatches of identical dimensions, three on each side of the centerline. There was a single gantry to load or discharge the containers mounted on rails to move forward and aft and they were fitted with a retractable boom that could be extended outboard over a wharf or barge. The retractable boom had a capacity of 56,000 lbs. The ships had accommodations for 60 crewmembers and 12 passengers.

The *President Lincoln* served in APL's transpacific trade with some measured degree of success. However, unlike many of its "modified-mariner" fleetmates, the *President Lincoln* (and the *President Tyler*) was not converted to a fully cellular configuration in the mid-1970s. Instead the ship was traded-in to the Maritime Administration. The ship was renamed *Lincoln* and placed in the National Defense Reserve Fleet in Suisun Bay, California on October 11, 1979, and renamed the *President* on January 1, 1980.

Description/Characteristics of Vessel Type

Type: C4-S-1q / 1qb
Official Number: 285311
Previous name: *President Lincoln*
Sister ships: *President Tyler*
Builder: Bethlehem Steel Company Shipyard in San Francisco.
Year: 1960
Length: 528'
Beam: 76'
Depth: 32.5'
Draft: 27'
Gross Tonnage (GRT): 13,223
Speed: 20 knots
Main Engine: Bethlehem Steel Steam turbines, rated at 17,500 shaft horsepower, Babcock & Wilcox boilers.

The SS *Lincoln* at Suisun Bay Reserve Fleet in Benicia, California in February 2009. Maritime Administration photos.

The Searacers were designed and constructed a few years after the introduction of container shipping. Their keels were laid only three years after the pioneering 1956 voyage of the *Ideal-X,* the acknowledged first containership. The potential for containerized shipping to provide enormous increases in efficiency over traditional break-bulk and palletized cargo handling methods was recognized quickly; however, it took quite some time for ship design to evolve to meet that potential. The *President Lincoln* exhibits an early example of the vertical cell guide structure designed to stack and securely stow containers inside cargo holds. Prior to this development, containers were handled inside traditional break-bulk cargo holds in a manner similar to a very large pallet. Because containers were large and bulky, they were generally placed inside the "square of the hatch" and normally no more than one container high on each "tween deck." The vertical cell guide method of container stowage allowed containers to be stacked one on top of another for the full height of the cargo hold; provided no intermediate decks penetrated the stack.

The Searacers were modified versions of the common U.S. Mariner design, and employed the traditional structural design of break-bulk vessels. When viewed in cross-section, this design featured a continuous main deck that formed the upper hull girder. Two or three intermediate 'tween decks permitted cargo stowage inside the cargo hold. These tween decks also contributed to the ship's structural strength. Hatch openings in all decks were kept to a minimum; both to protect the cargo inside the hold and to maximize the ship's longitudinal strength. Typically, non-tight hatch covers were fitted at each tween deck. Such arrangements limited the number of containers that could be efficiently stowed inside a hold.

In the Searacers, a compromise was developed that permitted a substantial increase in interior container stowage while maintaining the traditional tween deck arrangement. The hatch opening, or "square of the hatch" was substantially increased; this required heavier deck structure and increased deck thickness to provide the necessary longitudinal strength. The intermediate tween deck hatches were eliminated. The increased size of the hatch square allowed containers to be stowed in six stacks across and four high. There were two tween decks inside the hold that could accommodate break-bulk and special cargo.

Although this container stowage arrangement was an improvement, it was not satisfactory in practice. The handling of break-bulk cargo and containers interfered with one another. The vertical cell guide arrangement was satisfactory, and survived into modern containerships. Structural designs eventually evolved into a form that allowed the internal cell guides and hatch squares to be maximized. Many break-bulk cargo vessels similar to the Searacers were later converted along those lines into fully cellular containerships. It is interesting to note that the Searacers were not converted, even though they were of similar vintage.

The *President Lincoln* and *President Tyler* were modified in 1968 to increase their container capacity to 378 TEU[4]. The work, done at the Willamette Iron and Steel Corporation in Richmond, California, involved increasing the amount of cellular hold space and extending the trackage for the gantries. Work done in 1971 further increased their capacity to 410 TEU. APL placed their first container-only vessels in service in 1974. In spite of the modifications, by the late 1970s the Searacers had too little container capacity to be competitive and demand for their break-bulk capacity was declining. In 1979 the ships were traded-in to the Maritime Administration.

Statement of Significance

The *Lincoln* was one of two combination break-bulk-container vessels, or Searacers, that was constructed when shipping companies were beginning the transition from the traditional break-bulk cargo ship to container ships. The *President Lincoln* and *President Tyler* were the first ships built in the U.S. with cellular holds designed to accommodate containers, and the first built with container- handling gantries. Despite these firsts, the ships employed a traditional structural design that can best be described as transitional in the development of the modern containership. This compromise illustrates a difficult and controversial period when shipping companies wrestled with more cost-effective and efficient methods to carry their cargo in order to be more competitive. While the *President Lincoln* was just one of two such vessels built, the design was experimental in nature and proved to be inefficient. Consequently, no more vessels of this type were built.

Historical Integrity

The vessel was originally constructed in 1961 and was modified in 1968 to increase its container capacity. The modifications increased the amount of cellular hold space and extended the trackage for the gantries. The vessel was further modified in 1971, which increased its capacity to 410 TEU. All (or most) salient design features of structure, machinery and equipment are substantially intact. The vessel's physical integrity is very degraded, and the ship's overall condition is poor. *Lincoln* represents an obsolete type which has little utility in modern shipping markets.

National Register Eligibility Statement

The *Lincoln* is not yet 50-years-old. Although it exhibits transitional structural arrangements for container stowage, its design and technology were not revolutionary and did not influence future designs, except perhaps to illustrate that the Searacer class was inefficient, therefore no more were built. Ships could either handle break-bulk cargo or containers, but not both and the

[4] A TEU is a unit for describing a ship's cargo carrying capacity, or a shipping terminal's cargo handling capacity, based on the original standard container of 20x8x8, or Twenty-foot Equivalent Unit. The contemporary standard forty-foot (40x8x8 feet) container equals two TEUs.

two systems actually worked against one another. This was demonstrated only a few years after the introduction of the Searacers, when three near-sister ships of the C4-S-1qa design were constructed as pure break-bulk vessels. The *Lincoln* is not associated with a significant event. It is associated with George G. Sharp, acclaimed naval architect and marine engineer, who was the chief surveyor for the American Bureau of Shipping before starting his own marine architectural and engineering firm in 1920. Sharp's designs include the Nuclear Ship *Savannah*, the first nuclear-powered combination cargo/passenger ship and the USNS *Comet*, the first roll-on-roll-off vessel carrier built for the Military Sea Transportation Service (MSTS)[5]. Sharp's plans were used on hundreds of ships; however, the Searacer class was not successful and does not represent the best of the company's designs.

Date: 15 April 2009
Determination: NOT ELIGIBLE

Sources

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Internet Sites

Maritime Administration's Property Management and Archive Record System Website: http://www.pmars.imsg.com/detail.asp?Ship=3026

Maritime Business Strategies, LLC: www.coltoncompany.com/shipbldg/ussbldrs/postwwii/shipyards/

www.globalsecurity.org/military/systems/ship/taot-181.htm

[5] MSTS was a post-World War II combination of four predecessor government agencies that handled similar sealift functions. These included the Navy's Naval Transportation Service and Fleet Support Service, the Army Transport Service, and the War Shipping Administration of the United States Maritime Commission. MSTS was renamed Military Sealift Command in 1970.